

PATENT COOPERATION TREATY

09/530524

31075  
PCT

From the INTERNATIONAL BUREAU

PCT

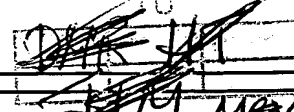
INFORMATION CONCERNING ELECTED  
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

To:

TANG, Henry  
Baker & Botts, LLP  
30 Rockefeller Plaza  
New York, NY 10112-0228  
ÉTATS-UNIS D'AMÉRIQUERECEIVED  
BAKER & BOTTS, L.L.P.

JUL 14 AM 11:22

Date of mailing (day/month/year) 01 July 1999 (01.07.99)			
Applicant's or agent's file reference 31075-PCT			
International application No. PCT/US97/20024	International filing date (day/month/year) 04 November 1997 (04.11.97)	Priority date (day/month/year)	
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK et al			

IMPORTANT INFORMATION

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

National :CA,US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:


None

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

Docketed

For 5/14/2000 by

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. (41-22) 740.14.35	Authorized officer: F. Baechler  Telephone No. (41-22) 338.83.38
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## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark  
Office  
(Box PCT)  
Crystal Plaza 2  
Washington, DC 20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 01 July 1999 (01.07.99)	
International application No. PCT/US97/20024	Applicant's or agent's file reference 31075-PCT
International filing date (day/month/year) 04 November 1997 (04.11.97)	Priority date (day/month/year)
Applicant CHANG, Shih-Fu et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
02 June 1999 (02.06.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Baechler Telephone No.: (41-22) 338.83.38
---	---

# PATENT COOPERATION TREATY 09/530524

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: HENRY TANG  
BAKER & BOTTS, LLP  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112-0228

**PCT**

WRITTEN OPINION

(PCT Rule 66)

Date of Mailing  
(day/month/year)

**20 DEC 1999**

Applicant's or agent's file reference  
31075-PCT

**REPLY DUE**  
within TWO months  
from the above date of mailing

International application No.  
PCT/US97/20024

International filing date (day/month/year)  
04 NOVEMBER 1997

Priority date (day/month/year)  
NONE

International Patent Classification (IPC) or both national classification and IPC  
IPC(6): G06K 9/00 and US Cl.: 382/115, 118, 165, 282, 283; 348/14, 19, 652

Applicant  
THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Docketed  
For 2 120 12000 By *[Signature]*

3. The applicant is hereby invited to reply to this opinion.

**When?** See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).~~

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 04 MARCH 2000

Name and mailing address of the IPEA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

*[Signature]*  
CHRIS KELLEY

Telephone No. (703) 305-3900

# PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

receiving Office use only

69/530524

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference (if desired) (12 characters maximum) 31075-PCT

**Box No. I TITLE OF INVENTION**  
VIDEO SIGNAL FACE REGION DETECTION

**Box No. II APPLICANT**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK  
116th Street and Broadway  
New York, NY 10027  
US

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (i.e. country) of nationality:  
US

State (i.e. country) of residence:  
US

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

CHANG, SHIH-FU  
560 Riverside Drive, Apt. 18K  
New York, NY 10027  
US

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:  
TW

State (i.e. country) of residence:  
US

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent ☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

TANG, Henry; RAYMOND, Dana M.; and MAUNE, James J.  
Baker & Botts, LLP  
30 Rockefeller Plaza  
New York, NY 10112-0228  
US

Telephone No.  
(212) 705-5000

Facsimile No.  
(212) 705-5020

Teleprinter No.

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

**Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS**

*If none of the following sub-boxes is used, this sheet is not to be included in the request.*

Name and address: (Family name followed by given name; for a legal entity, full official designation)  
The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

WANG, HUALU  
528 Riverside Drive, Apt. 5A  
New York, NY 10027  
US

This person is:

- ☐ applicant only  
☒ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:  
CN

State (i.e. country) of residence:  
US

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation)  
The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only  
☐ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation)  
The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only  
☐ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation)  
The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only  
☐ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

**Regional Patent**

- ☐ **AP ARIPO Patent:** GH Ghana, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☐ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☐ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☐ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) .....

**National Patent (if other kind of protection or treatment desired, specify on dotted line):**

- |   |   |
|---|---|
| <input type="checkbox"/> AL Albania .....                               | <input type="checkbox"/> LV Latvia .....                                    |
| <input type="checkbox"/> AM Armenia .....                               | <input type="checkbox"/> MD Republic of Moldova .....                       |
| <input type="checkbox"/> AT Austria .....                               | <input type="checkbox"/> MG Madagascar .....                                |
| <input type="checkbox"/> AU Australia .....                             | <input type="checkbox"/> MK The former Yugoslav Republic of Macedonia ..... |
| <input type="checkbox"/> AZ Azerbaijan .....                            | <input type="checkbox"/> MN Mongolia .....                                  |
| <input type="checkbox"/> BA Bosnia and Herzegovina .....                | <input type="checkbox"/> MW Malawi .....                                    |
| <input type="checkbox"/> BB Barbados .....                              | <input type="checkbox"/> MX Mexico .....                                    |
| <input type="checkbox"/> BG Bulgaria .....                              | <input type="checkbox"/> NO Norway .....                                    |
| <input type="checkbox"/> BR Brazil .....                                | <input type="checkbox"/> NZ New Zealand .....                               |
| <input type="checkbox"/> BY Belarus .....                               | <input type="checkbox"/> PL Poland .....                                    |
| <input checked="" type="checkbox"/> CA Canada .....                     | <input type="checkbox"/> PT Portugal .....                                  |
| <input type="checkbox"/> CH and LI Switzerland and Liechtenstein .....  | <input type="checkbox"/> RO Romania .....                                   |
| <input type="checkbox"/> CN China .....                                 | <input type="checkbox"/> RU Russian Federation .....                        |
| <input type="checkbox"/> CU Cuba .....                                  | <input type="checkbox"/> SD Sudan .....                                     |
| <input type="checkbox"/> CZ Czech Republic .....                        | <input type="checkbox"/> SE Sweden .....                                    |
| <input type="checkbox"/> DE Germany .....                               | <input type="checkbox"/> SG Singapore .....                                 |
| <input type="checkbox"/> DK Denmark .....                               | <input type="checkbox"/> SI Slovenia .....                                  |
| <input type="checkbox"/> EE Estonia .....                               | <input type="checkbox"/> SK Slovakia .....                                  |
| <input type="checkbox"/> ES Spain .....                                 | <input type="checkbox"/> SL Sierra Leone .....                              |
| <input type="checkbox"/> FI Finland .....                               | <input type="checkbox"/> TJ Tajikistan .....                                |
| <input type="checkbox"/> GB United Kingdom .....                        | <input type="checkbox"/> TM Turkmenistan .....                              |
| <input type="checkbox"/> GE Georgia .....                               | <input type="checkbox"/> TR Turkey .....                                    |
| <input type="checkbox"/> GH Ghana .....                                 | <input type="checkbox"/> TT Trinidad and Tobago .....                       |
| <input type="checkbox"/> HU Hungary .....                               | <input type="checkbox"/> UA Ukraine .....                                   |
| <input type="checkbox"/> IL Israel .....                                | <input type="checkbox"/> UG Uganda .....                                    |
| <input type="checkbox"/> IS Iceland .....                               | <input checked="" type="checkbox"/> US United States of America .....       |
| <input type="checkbox"/> JP Japan .....                                 | <input type="checkbox"/> UZ Uzbekistan .....                                |
| <input type="checkbox"/> KE Kenya .....                                 | <input type="checkbox"/> VN Viet Nam .....                                  |
| <input type="checkbox"/> KG Kyrgyzstan .....                            | <input type="checkbox"/> YU Yugoslavia .....                                |
| <input type="checkbox"/> KP Democratic People's Republic of Korea ..... | <input type="checkbox"/> ZW Zimbabwe .....                                  |
| <input type="checkbox"/> KR Republic of Korea .....                     |   |
| <input type="checkbox"/> KZ Kazakstan .....                             |   |
| <input type="checkbox"/> LC Saint Lucia .....                           |   |
| <input type="checkbox"/> LK Sri Lanka .....                             |   |
| <input type="checkbox"/> LR Liberia .....                               |   |
| <input type="checkbox"/> LS Lesotho .....                               |   |
| <input type="checkbox"/> LT Lithuania .....                             |   |
| <input type="checkbox"/> LU Luxembourg .....                            |   |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

In addition to the designations made above, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except the designation(s) of .....  
 applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

**Box No. VI PRIORITY CLAIM**Further priority claims are indicated in the Supplemental Box ☐

The priority of the following earlier application(s) is hereby claimed:

Country (in which, or for which, the application was filed)	Filing Date (day/month/year)	Application No.	Office of filing (only for regional or international application)
item (1)	( )		
item (2)	( )		
item (3)	( )		

Mark the following check-box if the certified copy of the earlier application is to be issued by the Office which for the purposes of the present international application is the receiving Office (a fee may be required):

☐ The receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):

**Box No. VII INTERNATIONAL SEARCHING AUTHORITY**

**Choice of International Searching Authority (ISA)** (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): ISA/US

**Earlier search** Fill in where a search (international, international-type or other) by the International Searching Authority has already been out or requested and the Authority is now requested to base the international search, to the extent possible, on the results of that earlier search. such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request:  
Country (or regional Office): \_\_\_\_\_ Date (day/month/year): \_\_\_\_\_ Number: \_\_\_\_\_

**Box No. VIII CHECK LIST**

This international application contains the following number of sheets:

- |                |   |                  |
|----------------|---|------------------|
| 1. request     | : | 4 sheets         |
| 2. description | : | 24 sheets        |
| 3. claims      | : | 3 sheets         |
| 4. abstract    | : | 1 sheets         |
| 5. drawings    | : | 12 sheets        |
| <b>Total</b>   | : | <b>44 sheets</b> |

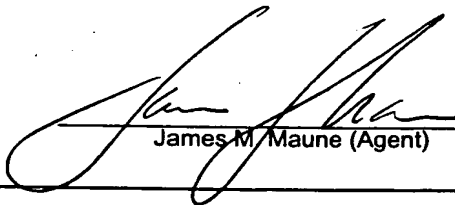
This international application is accompanied by the item(s) marked below:

- |   |  |
|---|--|
| 1. <input type="checkbox"/> separate signed power of attorney                         | 5. <input checked="" type="checkbox"/> fee calculation sheet                         |
| 2. <input type="checkbox"/> copy of general power of attorney                         | 6. <input type="checkbox"/> separate indications concerning deposited microorganisms |
| 3. <input type="checkbox"/> statement explaining lack of signature                    | 7. <input type="checkbox"/> nucleotide and/or amino acid sequence listing (diskette) |
| 4. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): | 8. <input type="checkbox"/> other (specify):   |

Figure No. \_\_\_\_\_ of the drawings (if any) should accompany the abstract when it is published.

**Box No. IX SIGNATURE OF APPLICANT OR AGENT**

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

  
James M. Maune (Agent)

1. Date of actual receipt of the purported international application:		2. Drawings  <input type="checkbox"/> received:  <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority specified by the applicant: <u>ISA/</u>	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid	

For International Bureau use only  
Date of receipt of the record copy by the International Bureau: \_\_\_\_\_

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line

IPEA/ US

09/530524

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only

Identification of IPEA

Date of receipt of DEMAND

Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION

Applicant's or agent's file reference  
31075-PCT

International application No.

International filing date (day/month/year)

(Earliest) Priority date (day/month/year)

PCT/US97/20024

04 November 1997 ( 04.11.97 )

( )

Title of invention

VIDEO SIGNAL FACE REGION DETECTION

Box No. II APPLICANT(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Telephone No.:

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK  
116th Street and Broadway  
New York, NY 10027  
US

Facsimile No.:

Teleprinter No.:

State (that is, country) of nationality:

US

State (that is, country) of residence:

US

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

CHANG, SHIH-FU  
560 Riverside Drive, Apt. 18K  
New York, NY 10027  
US

State (that is, country) of nationality:

TW

State (that is, country) of residence:

US

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

WANG, HUALU  
528 Riverside Drive, Apt. 5A  
New York, NY 10027  
US

State (that is, country) of nationality:

CN

State (that is, country) of residence:

US

☐

Further applicants are indicated on a continuation sheet.

**Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**The following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s) /common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official  
The address must include postal code and name of country.)*TANG, HENRY and  
MAUNE, JAMES J.  
Baker & Botts, LLP  
30 Rockefeller Plaza  
New York, NY 10112-0228  
US

Telephone No.:

(212) 705-5000

Facsimile No.:

(212) 705-5020

Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:\***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed.the description ☐ as originally filed☐ as amended under Article 34the claims ☐ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34the drawings ☐ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

\* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes not to elect:

**Box No. VI CHECK LIST**

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- |   |   |        |
|---|---|--------|
| 1. translation of international application                             | : | sheets |
| 2. amendments under Article 34  | : | sheets |
| 3. copy (or where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter   | : | sheets |
| 6. other (specify)  | : | sheets |

For International Preliminary Examining Authority use only

received                      not received

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

The demand is also accompanied by the item(s) marked below:

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet                             | 4. <input type="checkbox"/> statement explaining lack of signature                                  |
| 2. <input type="checkbox"/> separate signed power of attorney                            | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: | 6. <input checked="" type="checkbox"/> other (specify): Transmittal Letter                          |

**Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE**

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).

  
James J. Maune (Agent)

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

## PCT

## FEE CALCULATION SHEET

Annex to the Demand for international preliminary examination

International application No. <b>PCT/US97/20024</b>	For International Preliminary Examining Authority use only
Applicant's or agent's file reference <b>31075-PCT</b>	Date stamp of the IPEA
Applicant <b>THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK</b>	
<b>Calculation of prescribed fees</b>	
1. Preliminary examination fee .....	<b>490.00</b> <span style="border: 1px solid black; padding: 0 5px;">P</span>
2. Handling fee ( <i>Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.</i> ) .....	<b>162.00</b> <span style="border: 1px solid black; padding: 0 5px;">H</span>
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box .....	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <b>652.00</b> </div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <b>TOTAL</b> </div>
<b>Mode of Payment</b>	
<input type="checkbox"/> authorization to charge deposit account with the IPEA (see below)	<input type="checkbox"/> cash
<input checked="" type="checkbox"/> cheque	<input type="checkbox"/> revenue stamps
<input type="checkbox"/> postal money order	<input type="checkbox"/> coupons
<input type="checkbox"/> bank draft	<input type="checkbox"/> other (specify):
<b>Deposit Account Authorization</b> ( <i>this mode of payment may not be available at all IPEAs</i> )	
The IPEA/ <u>US</u> <input type="checkbox"/> is hereby authorized to charge the total fees indicated above to my deposit account.	
<input checked="" type="checkbox"/> ( <i>this check-box may be marked only if the conditions for deposit accounts of the IPEA so permit</i> ) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.	
<b>02-4377</b>	<b>2 June 1999</b>
Deposit Account Number	Date (day/month/year)
Signature	

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

09/530524  
PCT

To:

HENRY TANG  
BAKER & BOTTS, LLP  
30 ROCKEFELLER PLAZA  
NEW YORK NY 10112-0228

NOTIFICATION OF RECEIPT  
OF DEMAND

(PCT Rule 61.1(b), first sentence  
and Administrative Instructions, Section 601)

Date of mailing  
(day/month/year)

16 JUN 1999

Applicant's or agent's file reference  
31075-PCT

IMPORTANT NOTIFICATION

International application No.  
PCT/US97/20024

International filing date (day/month/year)  
04 NOV 97

Priority date (day/month/year)

Applicant

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF  
NEW YORK

1. The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

02 JUN 1999 (02.06.99)

2. This date of receipt is:

- ☒ the actual date of receipt of the demand.  
☐ the date on which the proper corrections to the demand were timely received.

RECEIVED  
BAKER & BOTTS, L.L.P.  
99 JUN 22 PM 12:24

3. ☐ This date is **AFTER** the expiration of 19 months from the priority date.

**Attention:** The election(s) made in the demand does (do) not have the effect of postponing the commencement of the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22).

For details, see Annex B to Form PCT/IB/301 sent by the International Bureau and Volume II of the PCT Applicant's Guide.

- ☐ This notification confirms the information given in person or by telephone on:

ON DOCKET FOR

5/9/00

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/US  
Assistant Commissioner for Patents  
Box PCT  
Washington, D.C. 20231  
Facsimile No.

Attn: IPEA/US

Authorized officer

Darlene Proctor

PCT Operations - IAPD Team 1

Telephone No. (703) 305-3689 (703) 305-3230 FAX

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

### WRITTEN OPINION

(PCT Rule 66)

To: HENRY TANG  
BAKER & BOTTS, LLP  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112-0228

Date of Mailing  
(day/month/year)

20 DEC 1999

Applicant's or agent's file reference  
31075-PCT

REPLY DUE within TWO months  
from the above date of mailing

International application No.  
PCT/US97/20024

International filing date (day/month/year)  
04 NOVEMBER 1997

Priority date (day/month/year)  
NONE

International Patent Classification (IPC) or both national classification and IPC  
IPC(6): G06K 9/00 and US Cl.: 382/115, 118, 165, 282, 283; 348/14, 19, 652

Applicant  
THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

When? See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).~~

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 04 MARCH 2000

Name and mailing address of the IPEA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

  
CHRIS KELLEY

Telephone No. (703) 305-3900



## WRITTEN OPINION

International application No.

PCT/US97/20024

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>4-6 and 9</u>	YES
	Claims <u>1-3, 7-8 and 10-15</u>	NO
Inventive Step (IS)	Claims <u>none</u>	YES
	Claims <u>1-15</u>	NO
Industrial Applicability (IA)	Claims <u>1-15</u>	YES
	Claims <u>none</u>	NO

**2. CITATIONS AND EXPLANATIONS**

Claims 1-3, 7-8 and 10-15 lack novelty under PCT Article 33(2) as being anticipated by Burt.

Regarding claims 1 and 15, Burt teaches a system and method for identifying face regions in a color image comprising: providing image data including data representative of chrominance for portions of said image (color tv camera 200a); comparing said chrominance data for each portion to values known to be skin tones, to thereby distinguish image portions representing skin tone colors from other regions (fleshtone detector 406 see col.8, lines 47-54); and the shape comparing regions having skin tones to templates consistent with the shape of a human face to identify possible face regions (note templates in col.9 have specific shapes as described in col.10, lines 46-66).

Regarding claims 2, 3 and 10-14, note that the database stores template as straight on and left and right which will meet the broad limitations in that straight on is rectangular with an aspect ratio of 1. Also note that the image portions have contiguous pixels.

Regarding claims 7 and 8 Burt teaches that moving images are analyzed which is equivalent to the claimed MPEG.

Claims 4-6 and 9 lack an inventive step under PCT Article 33(3) as being obvious over Burt in view of Nakagawa et al.

Regarding claims 4-6 and 9, although Burt fails to teach the specific spatial frequency requirements found in claims 4-6 and 9, Nakagawa does (see col.2, lines 59-63 and col.3, lines 1-11). Since both systems are used to recognize the human face, it would have been obvious to combine the teachings to produce a more robust system. Further, since Burt is silent as to the specific spatial frequencies of the human face one of ordinary skill in the art would have been motivated to look to other teachings to fill in such details.

(Continued on Supplemental Sheet.)

WRITTEN OPINION

International application No.

PCT/US97/20024

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**TIME LIMIT:**

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.

**V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):**

----- NEW CITATIONS -----

NONE

# PATENT COOPERATION TREATY

9 / 530524

PCT/US97/20024

3107S

PCT

PCT

## NOTIFICATION OF RECEIPT OF RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

TANG, Henry  
Baker & Botts, LLP  
30 Rockefeller Plaza  
New York, NY 10112-0228  
ETATS-UNIS D'AMERIQUE

RECEIVED  
BROMHEAD, GRANT,  
JORDON & RAYMOND

1998 JAN 13 A 11:16

TO: -  
DHR H4 JJA

Date of mailing (day/month/year) 23 December 1997 (23.12.97)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 31075-PCT	International application No. PCT/US97/20024

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK (for all designated  
States except US)

CHANG, Shih-Fu et al (for US)

International filing date : 04 November 1997 (04.11.97)  
Priority date(s) claimed :  
Date of receipt of the record copy  
by the International Bureau : 22 December 1997 (22.12.97)  
List of designated Offices :

National : CA,US

### ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- ☒ time limits for entry into the national phase;
- ☒ confirmation of precautionary designations;
- ☐ requirements regarding priority documents.

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

ON DOCKET FOR

2/4/99 - Full Review  
7/4/99 - Deadline

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

Aino Metcalfe

Telephone No. (41-22) 338.83.38

## INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated in the Notification of Receipt of Record Copy (Form PCT/IB/301) by paying national fees and furnishing translations, as prescribed by the applicable national laws.

The time limit for performing these procedural acts is **20 MONTHS** from the priority date or, for those designated States which the applicant elects in a demand for international preliminary examination or in a later election, **30 MONTHS** from the priority date, provided that the election is made before the expiration of 19 months from the priority date. Some designated (or elected) Offices have fixed time limits which expire even later than 20 or 30 months from the priority date. In other Offices an extension of time or grace period, in some cases upon payment of an additional fee, is available.

In addition to these procedural acts, the applicant may also have to comply with other special requirements applicable in certain Offices. **It is the applicant's responsibility** to ensure that the necessary steps to enter the national phase are taken in a timely fashion. Most designated Offices do not issue reminders to applicants in connection with the entry into the national phase.

For detailed information about the procedural acts to be performed to enter the national phase before each designated Office, the applicable time limits and possible extensions of time or grace periods, and any other requirements, see the relevant Chapters of Volume II of the PCT Applicant's Guide. Information about the requirements for filing a demand for international preliminary examination is set out in Chapter IX of Volume I of the PCT Applicant's Guide.

GR and ES became bound by PCT Chapter II on 7 September 1996 and 6 September 1997, respectively, and may, therefore, be elected in a demand or a later election filed on or after 7 September 1996 and 6 September 1997, respectively, regardless of the filing date of the international application. (See second paragraph above.)

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

## CONFIRMATION OF PRECAUTIONARY DESIGNATIONS

This notification lists only specific designations made under Rule 4.9(a) in the request. It is important to check that these designations are correct. Errors in designations can be corrected where precautionary designations have been made under Rule 4.9(b). The applicant is hereby reminded that any precautionary designations may be confirmed according to Rule 4.9(c) before the expiration of 15 months from the priority date. If it is not confirmed, it will automatically be regarded as withdrawn by the applicant. There will be no reminder and no invitation. Confirmation of a designation consists of the filing of a notice specifying the designated State concerned (with an indication of the kind of protection or treatment desired) and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.

## REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents the following is recalled.

Where the priority of an earlier national (i.e., national or regional) application is claimed, the applicant must submit a copy of the said national application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date (Rule 17.1).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit.

It is recalled that, where several priorities are claimed, the priority date to be considered for the purposes of computing the 16-month time limit is the filing date of the earliest application whose priority is claimed.

If the priority document concerned is not submitted to the International Bureau before the expiration of the 16-month time limit, or if the request to the receiving Office to transmit the priority document has not been made (and the corresponding fee, if any, paid) before the expiration of this time limit, any designated State may disregard the priority claim.

# PATENT COOPERATION TREATY

09 / 530524

RECEIVED  
BAKER & BOTTS, L.L.P.

98 JUL 10 AM 10:43

From the INTERNATIONAL SEARCHING AUTHORITY

To: HENRY TANG  
BAKER & BOTTS, LLP  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112-0228

PCT

TO

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

Date of Mailing  
(day/month/year)

08 JUL 1998

Applicant's or agent's file reference  
31075-PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.  
PCT/US97/20024

International filing date  
(day/month/year)

04 NOVEMBER 1997

Applicant  
THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

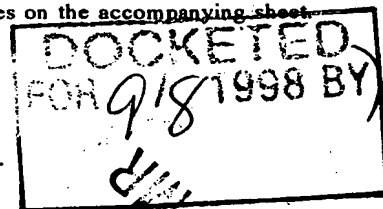
Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.



2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Further action(s): The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

CHRIS KELLEY

Telephone No. (703) 305-3900

(See notes on accompanying sheet)

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 31075-PCT	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5
International application No. PCT/US97/20024	International filing date (day/month/year) 04 NOVEMBER 1997	(Earliest) Priority Date NONE
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☐ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
  - ☐ filed with the international application.
  - ☐ furnished by the applicant separately from the international application,
    - ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
  - ☐ transcribed by this Authority.
4. With regard to the title,
  - ☒ the text is approved as submitted by the applicant.
  - ☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,
  - ☐ the text is approved as submitted by the applicant.
  - ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:  
Figure No. 1
  - ☐ as suggested by the applicant.
  - ☒ because the applicant failed to suggest a figure.
  - ☐ because this figure better characterizes the invention.

☐ None of the figures.

**Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)**

A highly efficient method is disclosed for rapidly detecting human face regions in color images and video frames. The method consists of three stages, where chrominance (stage 1), shape (stage 2) and spatial frequency information (stage 3) are used respectively. In the first stage, the chrominance data for incremental image portions is compared to skin tone data to identify skin tone image portions. In the second stage regions of contiguous skin tone image portions are compared to templates corresponding to the shape of faces in images. In the optional third stage, the spatial frequency characteristics of luminance data in the selected possible face region is compared to at least one threshold value to eliminate regions that do not include spatial frequency characteristics corresponding to those of a face region.

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US97/20024**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :G06K 9/00

US CL :382/115, 118, 165, 282, 283; 348/14, 19, 652

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 382/115, 118, 165, 282, 283; 348/14, 19, 652

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,063,603 A (BURT) 05 November 1991, see col.8, lines 44-54 and col.9, lines 3-26 also see figures 3 and 4.	1-3, 7-8, 10-15 ----- 4-6 and 9
X --- Y	US 5,479,529 A (NAKAGAWA et al) 26 December 1995, see col.2, lines 59-63 and col.3, lines 1-11.	1-3, 7-8, 10-15 ----- 4-6 and 9
A	US 5,550,928 A (LU et al) 27 August 1996, see abstract	1 and 15

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*E* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

02 FEBRUARY 1998

Date of mailing of the international search report

08 JUL 1998

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

CHRIS KELLEY

Telephone No. (703) 305-3900

## NOTES TO FORM PCT/ISA/220 (continued)

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

The statement should be brief, it should not exceed 500 words if in English or if translated into English.

It should not be confounded with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It should not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### In what language ?

The amendments must be made in the language in which the international application is published. The letter and any statement accompanying the amendments must be in the same language as the international application if that language is English or French; otherwise, it must be in English or French, at the choice of the applicant.

### Consequence if a demand for international preliminary examination has already been filed ?

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase ?

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

09/530524

31075  
PCT

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:	RECEIVED BAKER & BOTTS, L.L.P.
TANG, Henry	99 MAY 25 AM 11:51
Baker & Botts, LLP	
30 Rockefeller Plaza	
New York, NY 10112-0228	
ÉTATS-UNIS D'AMÉRIQUE	

Date of mailing (day/month/year) 14 May 1999 (14.05.99)		IMPORTANT NOTICE	
Applicant's or agent's file reference 31075-PCT			
International application No. PCT/US97/20024	International filing date (day/month/year) 04 November 1997 (04.11.97)	Priority date (day/month/year)	
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

CA

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 14 May 1999 (14.05.99) under No. WO 99/23600

## REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

## REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

DOCKETED

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

Encl. in docket

CM

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

00 APR 10 AM 11:15

To: HENRY TANG  
BAKER & BOTTS, LLP  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112-0228

PCT TO

NOTIFICATION OF TRANSMITTAL OF  
INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing  
(day/month/year)

05 APR 2000

Applicant's or agent's file reference

31075-PCT

IMPORTANT NOTIFICATION

International application No.

PCT/US97/20024

International filing date (day/month/year)

04 NOVEMBER 1997

Priority Date (day/month/year)

NONE

Applicant

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

BHAVESH MEHTA

Telephone No. (703) 305-3900

Joni Hill

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 31075-PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US97/20024	International filing date (day/month/year) 04 NOVEMBER 1997	Priority date (day/month/year) NONE
International Patent Classification (IPC) or national classification and IPC IPC(6): G06K 9/00 and US Cl.: 382/115, 118, 165, 282, 283; 348/14, 19, 652		
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 0 sheets.

## 3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  02 JUNE 1999	Date of completion of this report  04 MARCH 2000
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer  BHAVESH MEHTA <i>Joni Hill</i>
Facsimile No. (703) 305-3230	Telephone No. (703) 305-3900

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US97/20024

**I. Basis of the report**

1. This report has been drawn on the basis of *(Substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain*

- ☒ the international application as originally filed.
- ☒ the description, pages 1-24 , as originally filed.  
pages NONE , filed with the demand.  
pages NONE , filed with the letter of \_\_\_\_\_.  
pages \_\_\_\_\_ , filed with the letter of \_\_\_\_\_.
- ☒ the claims, Nos. 1-15 , as originally filed.  
Nos. NONE , as amended under Article 19.  
Nos. NONE ; filed with the demand.  
Nos. NONE , filed with the letter of \_\_\_\_\_.  
Nos. \_\_\_\_\_ , filed with the letter of \_\_\_\_\_.
- ☒ the drawings, sheets/~~fig~~ 1-11 , as originally filed.  
sheets/~~fig~~ NONE , filed with the demand.  
sheets/~~fig~~ NONE , filed with the letter of \_\_\_\_\_.  
sheets/~~fig~~ \_\_\_\_\_ , filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE .
- ☒ the claims, Nos. NONE .
- ☒ the drawings, sheets/~~fig~~ NONE .

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the ~~Supplemental Box~~ Additional observations below (Rule 70.2(c)).

4. Additional observations, if necessary:

NONE

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US97/20024

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims	<u>4-6 and 9</u>	YES
	Claims	<u>1-3, 7-8 and 10-15</u>	NO
Inventive Step (IS)	Claims	<u>none</u>	YES
	Claims	<u>1-15</u>	NO
Industrial Applicability (IA)	Claims	<u>1-15</u>	YES
	Claims	<u>none</u>	NO

**2. CITATIONS AND EXPLANATIONS**

Claims 1-3, 7-8 and 10-15 lack novelty under PCT Article 33(2) as being anticipated by Burt.

Regarding claims 1 and 15, Burt teaches a system and method for identifying face regions in a color image comprising: providing image data including data representative of chrominance for portions of said image (color tv camera 200a); comparing said chrominance data for each portion to values known to be skin tones, to thereby distinguish image portions representing skin tone colors from other regions (fleshtone detector 406 see col.8, lines 47-54); and the shape comparing regions having skin tones to templates consistent with the shape of a human face to identify possible face regions (note templates in col.9 have specific shapes as described in col.10, lines 46-66).

Regarding claims 2, 3 and 10-14, note that the database stores template as straight on and left and right which will meet the broad limitations in that straight on is rectangular with an aspect ratio of 1. Also note that the image portions have contiguous pixels.

Regarding claims 7 and 8 Burt teaches that moving images are analyzed which is equivalent to the claimed MPEG.

Claims 4-6 and 9 lack an inventive step under PCT Article 33(3) as being obvious over Burt in view of Nakagawa et al.

Regarding claims 4-6 and 9, although Burt fails to teach the specific spatial frequency requirements found in claims 4-6 and 9, Nakagawa does (see col.2, lines 59-63 and col.3, lines 1-11). since both systems are used to recognize the human face, it would have been obvious to combine the teachings to produce a more robust system. Further, since Burt is silent as to the specific spatial frequencies of the human face one of ordinary skill in the art would have been motivated to look to other teachings to fill in such details.

(Continued on Supplemental Sheet.)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US97/20024

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):**

----- NEW CITATIONS -----

NONE